# Unit 13 Reveal Grade 4

Content Area: **Math**
Course(s): **Math**
Time Period: **May**
Length: **3 weeks**
Status: **Published**

## Unit Overview

UNIT 13 PLANNER

### Units of Measurement and Data

PACING: 15 days

| LESSON | | MATH OBJECTIVE | LANGUAGE OBJECTIVE | SOCIAL AND EMOTIONAL LEARNING OBJECTIVE | LESSON | KEY VOCABULARY |
|---|---|---|---|---|---|---|
| **Unit Opener** | Measurement Number Lines Explore relatioinships between various units of measure on dual number lines. | | | | | |
| | | | | | | Math Terms |
| 13-1 | Relate Metric Units | Students convert larger metric units of length, liquid volume, and mass to smaller equivalent units. | Students use metric prefixes and terms for length, liquid volume, and mass to discuss converting larger metric units into smaller equivalent units. | Students use prior knowledge and new understanding of mathematical concepts to complete a task, building stronger self-efficacy. | 13-1 | centimeters<br>convert<br>grams<br>kilograms<br>kiloliters |
| 13-2 | Relate Customary Units of Weight | Students express larger units of weight in terms of smaller units. | Students use the correct units of weight to discuss expressing larger units of weight in terms of smaller units. | Students reflect on and describe the logic and reasoning used to make a mathematical decision or conclusion. | 13-2 | customary unit<br>equivalence table<br>ounces |
| 13-3 | Relate Customary Units of Capacity | Students express larger units of capacity in terms of smaller units. | Students use the correct units of capacity to discuss expressing larger units of capacity in terms of smaller units. | Students exchange ideas for mathematical problem-solving with a peer, listening attentively and providing thoughtful and constructive feedback. | 13-3 | capacity<br>cup<br>customary unit |
| 13-4 | Convert Units of Time | Students express larger units of time in terms of smaller units. | Students use the correct units of time to discuss expressing larger units of time in terms of smaller units. | Students engage in active listening and work collaboratively with a partner to complete mathematical tasks. | 13-4 | days<br>equivalence table<br>hours |
| 13-5 | Solve Problems That Involve Units of Measure | Students solve word problems that involve converting metric units of measure by using representations. | Students discuss solving word problems using the correct metric units of measure. | Students recognize and work to understand the emotions of others and practice empathetic responses. | 13-5 | bar diagram<br>number line |
| **Math Probe** | Measuring Length in Inches Gather data on students' understandings of customary units of length. | | | | | |
| 13-6 | Solve More Problems That Involve Units of Measure | Students use representations to solve word problems that involve converting units of measure. | Students discuss solving problems involving converting units of time using the correct units of time. | Students identify and discuss the emotions experienced during math learning. | 13-6 | elapsed time<br>time interval |
| 13-7 | Solve Problems Using a Perimeter Formula | Students use the formula for the perimeter of a rectangle. Students use the formula to solve real-world problems. | Students discuss using the formula for the perimeter of a rectangle using the terms *length* and *width*. | Students set learning goals and initiate work on tasks to accomplish their goals. | 13-7 | formula<br>length |
| 13-8 | Solve Problems Using an Area Formula | Students use the formula for the area of a rectangle. Students use the formula to solve real-world problems. | Students discuss using the formula for the area of a rectangle using the correct units of measure. | Students discuss how a rule or routine can help develop mathematical skills and knowledge and be responsible contributors. | 13-8 | area<br>formula<br>length<br>rectangle |
| 13-9 | Solve Problems Involving Perimeter and Area | Students solve real-world problems by applying the area and perimeter formulas. | Students discuss solving real-world problems by applying area and perimeter formulas using the terms *length, width, area,* and *perimeter*. | Students set learning goals and initiate work on tasks to accomplish their goals. | 13-9 | area<br>formula<br>perimeter |
| 13-10 | Display and Interpret Data on a Line Plot | Students create line plots to display measurement data sets in fractions of a unit. Students interpret measurement data displayed on a line plot to answer questions. | Students discuss creating line plots to display measurement data sets in fractions of a unit using the term *measurement data*. | Students actively listen without interruption as peers describe how they approached a complex mathematical task. | 13-10 | data<br>eighth(s)<br>fourth(s) |
| 13-11 | Solve Problems Involving Data on a Line Plot | Students solve problems involving addition and subtraction of fractions based on analysis of data displayed in line plots. | Students discuss creating line plots involving addition and subtraction of fractions of measurements using the term *measurement data*. | Students develop and execute a plan, including selecting tools for mathematical problem solving. | 13-11 | eighth(s)<br>fourth(s)<br>like denominators<br>line plot |
| **Unit Review** | | | | | | |
| **Fluency Practice** | | | | | | |
| **Unit Assessment** | | | | | | |
| **Performance Task** | | | | | | |

159A Unit 13 • Units of Measurement and Data

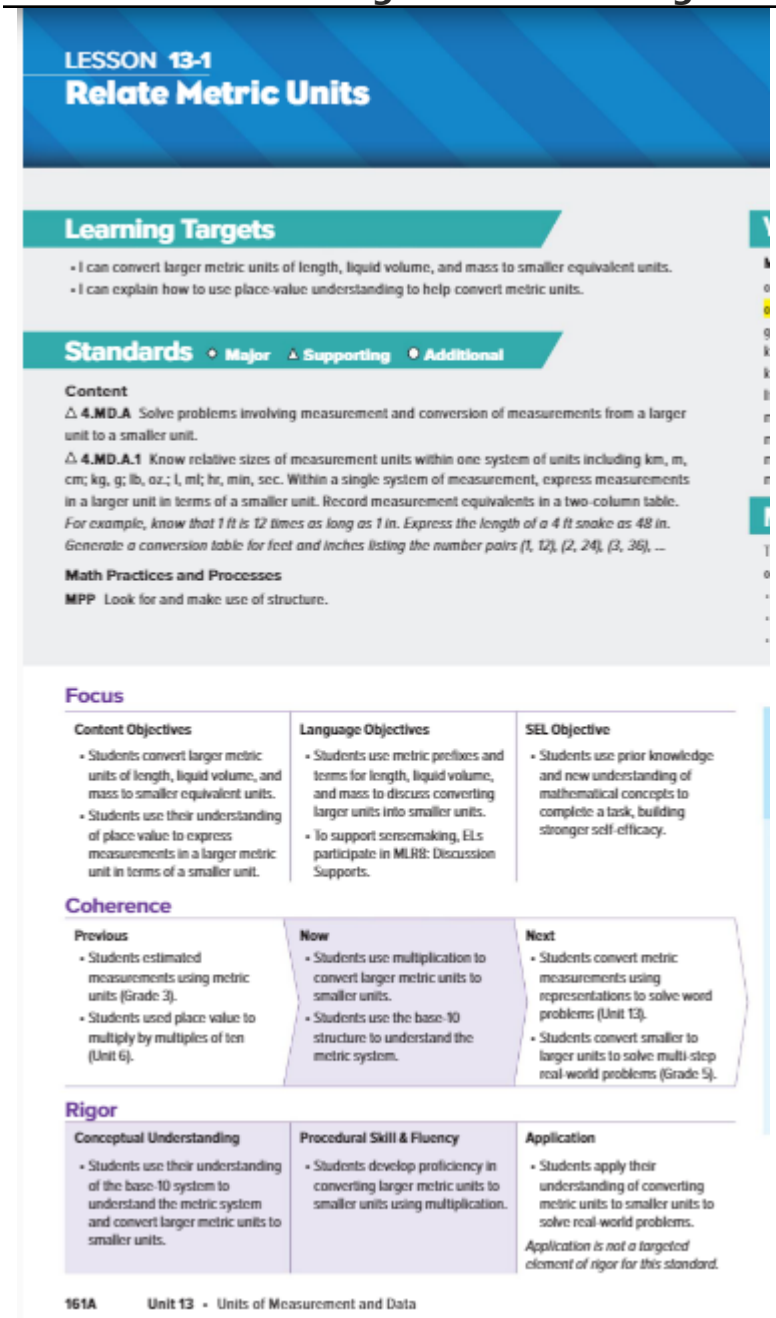
## Enduring Understandings

See Above

## Essential Questions

See Above

## Instructional Strategies and Learning Activities



LESSON 13-1

# Relate Metric Units

## Learning Targets

- I can convert larger metric units of length, liquid volume, and mass to smaller equivalent units.
- I can explain how to use place-value understanding to help convert metric units.

## Standards ◆ Major △ Supporting ○ Additional

**Content**

△ **4.MD.A** Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

△ **4.MD.A.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

**Math Practices and Processes**

**MPP** Look for and make use of structure.

## Focus

**Content Objectives**

- Students convert larger metric units of length, liquid volume, and mass to smaller equivalent units.
- Students use their understanding of place value to express measurements in a larger metric unit in terms of a smaller unit.

**Language Objectives**

- Students use metric prefixes and terms for length, liquid volume, and mass to discuss converting larger units into smaller units.
- To support sensemaking, ELs participate in MLR8: Discussion Supports.

**SEL Objective**

- Students use prior knowledge and new understanding of mathematical concepts to complete a task, building stronger self-efficacy.

## Coherence

**Previous**

- Students estimated measurements using metric units (Grade 3).
- Students used place value to multiply by multiples of ten (Unit 6).

**Now**

- Students use multiplication to convert larger metric units to smaller units.
- Students use the base-10 structure to understand the metric system.

**Next**

- Students convert metric measurements using representations to solve word problems (Unit 13).
- Students convert smaller to larger units to solve multi-step real-world problems (Grade 5).

## Rigor

**Conceptual Understanding**

- Students use their understanding of the base-10 system to understand the metric system and convert larger metric units to smaller units.

**Procedural Skill & Fluency**

- Students develop proficiency in converting larger metric units to smaller units using multiplication.

**Application**

- Students apply their understanding of converting metric units to smaller units to solve real-world problems.

*Application is not a targeted element of rigor for this standard.*

LESSON 13-2

# Relate Customary Units of Weight

## Learning Targets

- I can convert larger customary units of weight to smaller equivalent units.
- I can explain how to express larger customary units of weight in terms of smaller equivalent units of weight.

## Standards ◆ Major ▲ Supporting ● Additional

**Content**

▲ **4.MD.A.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.

▲ **4.MD.A.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

**Math Practices and Processes**

**MPP** Attend to precision.

## Focus

**Content Objective**

- Students express larger customary units of weight in terms of smaller units.

**Language Objectives**

- Students use the correct units to discuss expressing larger units of weight in terms of smaller units.
- To support sensemaking, ELs participate in MLR 5: Three Reads.

**SEL Objective**

- Students reflect on and describe the logic and reasoning used to make a mathematical decision or conclusion.

## Coherence

**Previous**

- Students solved one-step problems with metric units (Grade 3).
- Students solved comparison problems using multiplication (Unit 4).

**Now**

- Students use equivalence tables to convert larger customary units to smaller units.
- Students learn how to convert larger customary units to smaller units using multiplication.

**Next**

- Students use representations to solve problems involving measurement (Unit 13).
- Students convert small units to larger units in order to solve multi-step problems (Grade 5).

## Rigor

**Conceptual Understanding**

- Students learn how to use equivalence tables to convert larger customary of weight to smaller units.

**Procedural Skill & Fluency**

- Students develop proficiency in converting larger customary units of weight to smaller units.

**Application**

- Students apply their understanding of converting customary units of weight to solve real world problems.

*Application is not a targeted element of rigor for this standard.*

LESSON 13-3

# Relate Customary Units of Capacity

## Learning Targets

- I can convert larger customary units of capacity to smaller equivalent units.
- I can explain how to express larger customary units of capacity in terms of smaller equivalent units of capacity.

## Standards ◆ Major ▲ Supporting ● Additional

**Content**

△ **4.MD.A** Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

△ **4.MD.A.1** Know relative sizes of measurement units within one system of units including ft, in; km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.

**Math Practices and Processes**

**MPP** Construct viable arguments and critique the reasoning of others.

**MPP** Look for and make use of structure.

## Focus

| Content Objective | Language Objectives | SEL Objective |
|---|---|---|
| • Students express larger customary units of capacity in terms of smaller units. | • Students use the correct units to discuss expressing larger units of capacity in terms of smaller units.<br>• To optimize output, ELs participate in MLR5: Co-Craft Questions and Problems. | • Students exchange ideas for mathematical problem-solving with a peer, listening attentively and providing thoughtful and constructive feedback. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students solved one-step problems with metric units (Grade 3).<br>• Students converted customary units of length and weight (Unit 13). | • Students use equivalence tables to convert larger customary units of capacity to smaller units.<br>• Students explain how to convert larger customary units to smaller units using multiplication. | • Students solve problems using units of measure (Unit 13).<br>• Students convert standard units to solve multi-step real world problems (Grade 5). |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students learn how to use equivalence tables to convert larger customary units of capacity to smaller units. | • Students develop proficiency in converting larger customary units of capacity to smaller units. | • Students apply converting larger units of capacity to smaller units to solve problems.<br>*Application is not a targeted element of rigor for this standard.* |

LESSON 13-4

# Convert Units of Time

## Learning Targets

- I can convert larger units of time to smaller equivalent units.
- I can explain how to express larger units of time in terms of smaller equivalent units of time.

## Standards ◦ Major △ Supporting ◦ Additional

**Content**

△ **4.MD.A.1** Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

**Math Practices and Processes**

**MPP** Reason abstractly and quantitatively.

## Focus

| Content Objective | Language Objectives | SEL Objective |
|---|---|---|
| • Students express larger units of time in terms of smaller units. | • Students use the correct units to discuss expressing larger units of time in terms of smaller units.<br>• To optimize output, ELs participate in MLR5: Co-Craft Questions and Problems. | • Students engage in active listening and work collaboratively with a partner to complete mathematical tasks. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students told time to the nearest minute. They used open number lines to solve problems involving intervals of time. (Grade 3). | • Students convert larger units of time to smaller units of time. | • Students convert between units of time (Grade 5). |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students build on their understanding of units of time as they convert from larger units of time to smaller units. | • Students build proficiency with converting larger units of time to smaller units.<br>*Procedural Skill & Fluency is not a targeted element of rigor for this standard.* | • Students apply their understanding of converting larger units of time to smaller units of time to solve problems. |

LESSON 13-5

# Solve Problems That Involve Units of Measur

## Learning Targets

- I can solve word problems that require converting larger metric units of measure to smaller units.
- I can explain how to solve word problems that involve converting metric units of measure.

## Standards ● Major ▲ Supporting ○ Additional

**Content**

△ **4.MD.A** Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

△ **4.MD.A.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

**Math Practices and Processes**

**MPP** Model with mathematics.

## Focus

| Content Objective | Language Objectives | SEL Objective |
|---|---|---|
| • Students solve word problems that involve converting metric units of measure by using representations. | • Students discuss solving word problems using the correct metric units of measure.<br>• To support sensemaking, ELs participate in MLR 5: Three Reads. | • Students recognize and work to understand the emotions of others and practice empathetic responses. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students solved word problems involving masses or volumes given in the same units (Grade 3).<br>• Students converted from larger to smaller metric and customary units of measurement (Unit 13). | • Students solve problems that require converting larger units of measurement to smaller units.<br>• Students use bar diagrams and number lines to solve word problems. | • Students display and interpret data on a line plot (Unit 13).<br>• Students solve problems that involve converting units of measurement (Grade 5). |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students extend their understanding of converting units of measure.<br>*Conceptual Understanding is not a targeted element of rigor for this standard.* | • Students build proficiency with converting larger units of measure into smaller units. | • Students apply knowledge of converting larger units of measure to smaller units while solving problems within a real-world scenario. |

LESSON 13-6

# Solve More Problems That Involve Units of Measure

## Learning Targets

- I can solve word problems that require converting larger units of measure to smaller units.
- I can explain how to use representations to solve word problems that involve converting units of measure.

## Standards ◆ Major ▲ Supporting ● Additional

**Content**

▲ **4.MD.A** Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

▲ **4.MD.A.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

**Math Practices and Processes**

**MPP** Use appropriate tools strategically.

## Focus

| Content Objective | Language Objectives | SEL Objective |
|---|---|---|
| • Students use representations to solve word problems that involve converting units of measure. | • Students discuss solving problems involving converting units of time using the correct units of time.<br>• To support sensemaking, ELs participate in MLR2: Collect and Display. | • Students identify and discuss the emotions experienced during math learning. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students solved word problems involving mass or volume given in the same units (Grade 3).<br>• Students converted from larger to smaller metric and customary units of measurement (Unit 13). | • Students solve problems that require converting units of measurement.<br>• Students use bar diagrams and number lines to solve word problems. | • Students display and interpret data on a line plot (Unit 13).<br>• Students convert among different-sized measurement units to solve problems (Grade 5). |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students extend their understanding of converting units of measure.<br>*Conceptual understanding is not a targeted element of rigor for this standard.* | • Students build proficiency with converting larger units of measure into smaller units. | • Students apply knowledge of converting larger units of measure to smaller units while solving problems within a real-world scenario. |

LESSON 13-7

# Solving Problems Using a Perimeter Formu

## Learning Targets

- I can use the formula for the perimeter of a rectangle.
- I can apply the formula for the perimeter of a rectangle to solve real-world problems.

## Standards • Major △ Supporting ○ Additional

**Content**

△ **4.MD.A** Solve problems involving measurement and conversion of measurements.

△ **4.MD.A.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

**Math Practices and Processes**

**MPP** Look for and express regularity in repeated reasoning.

## Focus

| Content Objectives | Language Objectives | SEL Objective |
|---|---|---|
| • Students use the formula for the perimeter of a rectangle.<br>• Students use the formula for the perimeter of a rectangle to solve real world problems. | • Students discuss using the formula for the perimeter of a rectangle using the terms *length* and *width*.<br>• To maximize meta-language, ELs participate in MLR7: Compare and Connect. | • Students set learning goals and initiate work on tasks to accomplish their goals. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students solved problems with perimeter (Grade 3).<br>• Students solved two-step problems using addition and multiplication (Unit 6). | • Students use a formula for the perimeter of a rectangle.<br>• Students use the formula for the perimeter of rectangle to solve real-world problems. | • Students solve problems involving area and perimeter (Unit 13).<br>• Students find the area of various types of triangles (Grade 5). |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students explain how to use a formula for perimeter of a rectangle and use it to solve problems.<br>*Conceptual understanding is not a targeted element of rigor for this standard.* | • Students develop proficiency in using a formula to find the perimeter of rectangles. | • Students apply the formula for the perimeter of a rectangle to solve real-world problems. |

LESSON 13-8

# Solve Problems Using an Area Formula

## Learning Targets

- I can use the formula for the area of a rectangle.
- I can apply the formula for the area of a rectangle to solve real-world problems.

## Standards ◆ Major △ Supporting ○ Additional

**Content**

△ **4.MD.A** Solve problems involving measurement and conversion of measurements.

△ **4.MD.A.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

**Math Practices and Processes**

**MPP** Model with mathematics.

## Focus

| Content Objectives | Language Objectives | SEL Objective |
|---|---|---|
| • Students use the formula for the area of a rectangle.<br>• Students use the formula for the area of a rectangle to solve real-world problems. | • Students discuss using the formula for the area of a rectangle using the correct units of measure.<br>• To cultivate conversation, ELs participate in MLR4: Information Gap. | • Students discuss how a rule or routine can help develop mathematical skills and knowledge and be responsible contributors. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students solved problems with area (Grade 3).<br>• Students solved problems using multiplication (Unit 6). | • Students use a formula for the area of a rectangle.<br>• Students use the formula for the area of a rectangle to solve real-world problems. | • Students solve problems involving area and perimeter (Unit 13).<br>• Students find the area of various types of triangles (Grade 5). |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students explain how to use a formula for the area of a rectangle and use it to solve problems.<br>*Conceptual understanding is not a targeted element of rigor for this standard.* | • Students develop proficiency in using a formula to find the area of rectangles. | • Students apply the formula for the area of a rectangle to solve real-world problems. |

LESSON 13-9

# Solve Problems Involving Perimeter and Area

## Learning Target

- I can solve real-world problems involving area and perimeter.

## Standards ◆ Major △ Supporting ▢ Additional

**Content**

△ **4.MD.A.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

◇ **4.OA.A.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

**Math Practices and Processes**

**MPP** Construct viable arguments and critique the reasoning of others.

**MPP** Model with mathematics.

## Focus

| Content Objective | Language Objectives | SEL Objective |
|---|---|---|
| • Students solve real-world problems by applying the area and perimeter formulas. | • Students discuss solving real-world problems by applying area and perimeter formulas using the terms *length*, *width*, *area*, and *perimeter*.<br>• To cultivate conversation, ELs participate in MLR 1: Stronger and Clearer Each Time. | • Students set learning goals and initiate work on tasks to accomplish their goals. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students solved problems with area and perimeter (Grade 3).<br>• Students solved multi-step problems involving multiplication and addition (Unit 6). | • Students use the area and perimeter formulas to solve real-world problems. | • Students solve problems involving parallel and perpendicular lines (Unit 14).<br>• Students find the area of various types of triangles (Grade 5). |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students explain how to solve problems involving area and perimeter.<br>*Conceptual understanding is not a targeted element of rigor for this standard.* | • Students develop proficiency in using the area and perimeter formulas of rectangles to solve real-world problems. | • Students apply the formulas for area and perimeter of a rectangle to solve real-world problems. |

LESSON 13-10

# Display and Interpret Data on a Line Plot

## Learning Targets

- I can display measurement data in fractions of a unit on a line plot.
- I can interpret measurement data displayed on a line plot.

## Standards • Major △ Supporting ○ Additional

**Content**

△ **4.MD.B** Represent and interpret data.

△ **4.MD.B.4** Make a line plot to display a data set of measurements in fractions of a unit $\left(\frac{1}{2}, \frac{1}{4}, \frac{1}{8}\right)$. Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

**Math Practices and Processes**

**MPP** Reason abstractly and quantitatively.

## Focus

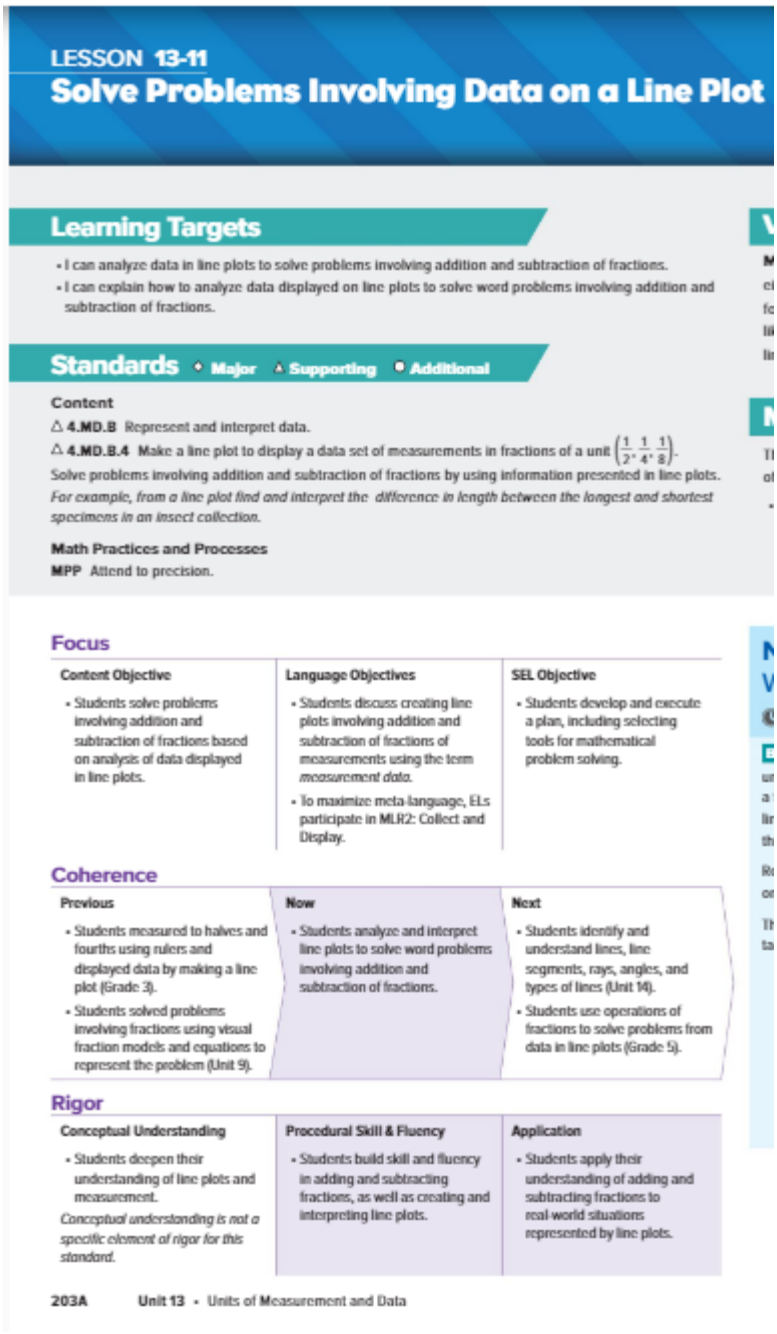
| Content Objectives | Language Objectives | SEL Objective |
|---|---|---|
| • Students create line plots to display measurement data sets in fractions of a unit.<br>• Students interpret measurement data displayed on a line plot to answer questions. | • Students discuss creating line plots to display measurements using the term *measurement data*.<br>• To support sensemaking, ELs participate in MLR8: Discussion Supports. | • Students actively listen without interruption as peers describe how they approached a complex mathematical task. |

## Coherence

| Previous | Now | Next |
|---|---|---|
| • Students measured to halves and fourths and displayed data by making a line plot (Grade 3).<br>• Students solved problems involving fractions using visual fraction models and equations to represent the problem (Unit 9). | • Students make line plots to display a set of measurements in fractions of a unit.<br>• Students create and interpret line plots that display a set of measurements in fractions of a unit. | • Students solve problems involving addition and subtraction of fractions based on data in line plots (Unit 13).<br>• Students use operations of fractions to solve problems from data in line plots (Grade 5). |

## Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students extend their understanding of line plots to interpret data.<br>*Conceptual understanding is not a targeted element of rigor for this standard.* | • Students build proficiency in creating line plots with collected data and interpreting data sets presented on line plots. | • Students apply their understanding of line plots to interpret data sets with real-world context. |



LESSON 13-11

## Solve Problems Involving Data on a Line Plot

### Learning Targets

- I can analyze data in line plots to solve problems involving addition and subtraction of fractions.
- I can explain how to analyze data displayed on line plots to solve word problems involving addition and subtraction of fractions.

### Standards ◆ Major ▲ Supporting ● Additional

**Content**

▲ **4.MD.B** Represent and interpret data.

▲ **4.MD.B.4** Make a line plot to display a data set of measurements in fractions of a unit $\left(\frac{1}{2}, \frac{1}{4}, \frac{1}{8}\right)$. Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

**Math Practices and Processes**

**MPP** Attend to precision.

### Focus

| Content Objective | Language Objectives | SEL Objective |
|---|---|---|
| • Students solve problems involving addition and subtraction of fractions based on analysis of data displayed in line plots. | • Students discuss creating line plots involving addition and subtraction of fractions of measurements using the term *measurement data*.<br>• To maximize meta-language, ELs participate in MLR2: Collect and Display. | • Students develop and execute a plan, including selecting tools for mathematical problem solving. |

### Coherence

| Previous | Now | Next |
|---|---|---|
| • Students measured to halves and fourths using rulers and displayed data by making a line plot (Grade 3).<br>• Students solved problems involving fractions using visual fraction models and equations to represent the problem (Unit 9). | • Students analyze and interpret line plots to solve word problems involving addition and subtraction of fractions. | • Students identify and understand lines, line segments, rays, angles, and types of lines (Unit 14).<br>• Students use operations of fractions to solve problems from data in line plots (Grade 5). |

### Rigor

| Conceptual Understanding | Procedural Skill & Fluency | Application |
|---|---|---|
| • Students deepen their understanding of line plots and measurement.<br>*Conceptual understanding is not a specific element of rigor for this standard.* | • Students build skill and fluency in adding and subtracting fractions, as well as creating and interpreting line plots. | • Students apply their understanding of adding and subtracting fractions to real-world situations represented by line plots. |



## Integration of Career Readiness, Life Literacies and Key Skills

| | |
|---|---|
| 9.1.2.CR.1 | Recognize ways to volunteer in the classroom, school and community. |
| 9.4.2.CI.1 | Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2). |
| 9.4.2.CI.2 | Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a). |
| 9.1.2.CR.2 | List ways to give back, including making donations, volunteering, and starting a business. |
| 9.1.2. FI.1 | Differentiate the various forms of money and how they are used (e.g., coins, bills, checks, debit and credit cards). |

| | |
|---|---|
| 9.4.2.CT.2 | Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). |
| 9.4.2.CT.3 | Use a variety of types of thinking to solve problems (e.g., inductive, deductive). |
| 9.1.2.FP.1 | Explain how emotions influence whether a person spends or saves. |
| 9.1.2.FP.3 | Identify the factors that influence people to spend or save (e.g., commercials, family, culture, society). |
| 9.4.2.DC.3 | Explain how to be safe online and follow safe practices when using the internet (e.g., 8.1.2.NI.3, 8.1.2.NI.4). |
| 9.1.2.PB.1 | Determine various ways to save and places in the local community that help people save and accumulate money over time. |
| 9.1.2.PB.2 | Explain why an individual would choose to save money. |
| 9.4.2.DC.6 | Identify respectful and responsible ways to communicate in digital environments. |
| 9.4.2.DC.7 | Describe actions peers can take to positively impact climate change (e.g., 6.3.2.CivicsPD.1). |
| 9.4.2.TL.2 | Create a document using a word processing application. |
| 9.4.2.TL.5 | Describe the difference between real and virtual experiences. |
| 9.4.2.TL.6 | Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.). |
| 9.4.2.TL.7 | Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts (e.g., W.2.6., 8.2.2.ED.2). |

## Technology and Design Integration

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| 8.1.2.CS.1 | Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences. |
| 8.1.2.DA.1 | Collect and present data, including climate change data, in various visual formats. |
| 8.1.2.DA.3 | Identify and describe patterns in data visualizations. |
| 8.1.2.DA.4 | Make predictions based on data using charts or graphs. |
| 8.1.2.AP.4 | Break down a task into a sequence of steps. |
| 8.1.2.AP.5 | Describe a program’s sequence of events, goals, and expected outcomes. |
| 8.2.2.ITH.4 | Identify how various tools reduce work and improve daily tasks. |

## Interdisciplinary Connections

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| LA.RI.4 | Reading Informational Text |
| LA.RI.4.1 | Refer to details and examples in a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text. |
| LA.RI.4.3 | Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. |
| LA.RI.4.4 | Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area. |
| LA.RI.4.5 | Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text. |
| LA.RI.4.6 | Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided. |

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| LA.RI.4.8 | Explain how an author uses reasons and evidence to support particular points in a text. |
| LA.RI.4.9 | Integrate and reflect on (e.g., practical knowledge, historical/cultural context, and background knowledge) information from two texts on the same topic in order to write or speak about the subject knowledgeably. |
| LA.SL.4 | Speaking and Listening |
| LA.SL.4.1 | Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly. |
| LA.SL.4.2 | Paraphrase portions of a text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally). |
| LA.SL.4.3 | Identify the reasons and evidence a speaker provides to support particular points. |
| LA.SL.4.4 | Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace. |

## Differentiation

- Understand that gifted students, just like all students, come to school to learn and be challenged.
- Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
- Consider grouping gifted students together for at least part of the school day.
- Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.
- Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.
- Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.

- **Definitions of Differentiation Components**:

    - Content – the specific information that is to be taught in the lesson/unit/course of instruction.
    - Process – how the student will acquire the content information.
    - Product – how the student will demonstrate understanding of the content.
    - Learning Environment – the environment where learning is taking place including physical location and/or student grouping

**Differentiation occurring in this unit:**




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## Modifications and Accommodations

Refer to QSAC EXCEL SMALL SPED ACCOMMOCATIONS spreadsheet in this discipline.

**Modifications and Accommodations used in this unit:**

## Benchmark Assessments

**Benchmark Assessments** are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

**Schoolwide Benchmark assessments:**

Aimsweb benchmarks 3X a year

Linkit Benchmarks 3X a year

DRA

**Additional Benchmarks used in this unit:**

Reveal Unit assessments

## Formative Assessments

Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).

**Formative Assessments used in this unit:**

Teacher observation

Checklists

Questioning and Discussion

Quizzes

## Summative Assessments

**summative assessments** evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

**Summative assessments for this unit:**

End of Unit assessments

## Instructional Materials

See above

## Standards

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| MA.4.MD.A.1 | Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table. |
| MA.4.MD.A.2 | Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. |
| MA.4.MD.A.3 | Apply the area and perimeter formulas for rectangles in real world and mathematical problems. |
| MA.4.MD.B.4 | Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. |